

3911D-HR High Rejection Dual Filter Mobile GPS Antenna for High RF Noise Environments

The 3911D-HR low interference GPS Antenna with Dual SAW High Rejection Filters allow excellent performance in high RF noise environments as found on vehicles with multiple antennas. It is ideal for fleet tracking, public safety, transit, precision agricultural and military applications.

The 3911D-HR features ESD circuit protection, an innovative two-stage low noise amplifier and a dual SAW high rejection filter. It also features a custom designed ceramic patch element that minimizes detuning effects caused by adjacent objects. The 3911D-HR provides consistent, clear GPS signal reception while minimizing loss-of-lock in high-RF fields. Housed in a weatherproof magnetic or screw mount enclosure, the 3911D-HR GPS antenna is ideal for demanding vehicle mounted GPS applications.

Features

- High rejection dual SAW filters allow placement near other transmitting antennas
- Low current: 7.5 mA @ 3.3V
- Wide voltage input range (2.7 - 5 VDC)
- Robust IP67 housing built for various weather conditions

RF/Electrical Specifications

Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz \pm 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	7.5 mA @ 3.3V 11.5 mA @ 5V

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
1.77" x 2.01" x .47" (45 x 51 x 12 mm)	.29 lbs (130 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector	Mounting Method
16.4' (5 meters) highly-flexible 174 sized cable	SMA standard	Magnetic (5 lb lift-off force) or permanent (pre-threaded for 3 x M2.5 screws)

Environmental Specifications

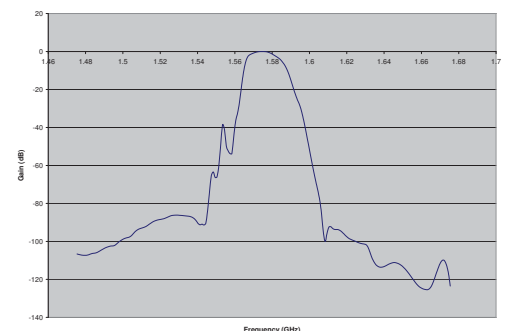
Temperature Range	Weatherproof
-40° C to +85° C operating	IP67



Low Noise Amplifier Specifications

Nominal Gain: 25 dB @ 3.3VDC 25.5 dB @ 5VDC
Noise Figure: 3.1 dB
Voltage: 2.7-5 VDC
ESD Circuit Protection: 15K volts

Out-of-band Filter Rejection



3915D-HR Low Power GPS Antenna with Dual High Rejection SAW Filters



The 3915D-HR Very Low Power High Rejection GPS Antenna has one of the industry's lowest power consumption and best out-of-band filter performance. The 3915D-HR features ESD circuit protection, an innovative very low power two-stage low noise amplifier and dual high rejection SAW filters. It also features a custom designed ceramic patch element that minimizes detuning effects caused by adjacent objects. The 3915D-HR provides consistent, clear GPS signal reception while minimizing loss-of-lock in high-RF fields. Housed in a weatherproof magnetic or screw mount enclosure, the 3915D-HR is ideal for most demanding, power critical GPS applications.

Features

- High rejection dual SAW filters allows placement near other transmitting antennas
- Low current: 1.3 mA @ 3.3V
- 20 dB gain
- Wide voltage input range (2.7 - 5 VDC)
- Robust IP67 housing built for various weather conditions



Low Noise Amplifier Specifications

Nominal Gain:
20 dB @ 3.3VDC

Noise Figure:
3.6 dB

Voltage:
2.7-5 VDC

ESD Circuit Protection:
15K volts

RF/Electrical Specifications

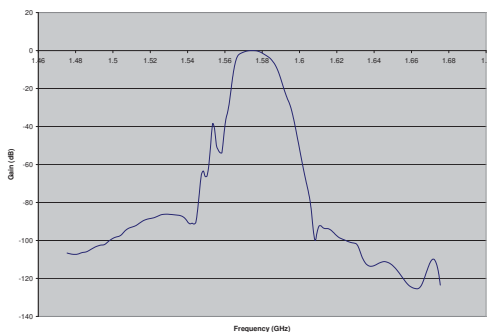
Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz ± 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	1.3 mA @ 3.3V 2 mA @ 5V

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
1.77" x 2.01" x .47" (45 x 51 x 12 mm)	.29 lbs (130 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector	Mounting Method
16.4' (5 meters) highly-flexible 174 sized cable	SMA standard	Magnetic (5 lb lift-off force) or permanent (pre-threaded for 3 x M2.5 screws)

Out-of-band Filter Rejection



Environmental Specifications

Temperature Range	Weatherproof
-40° C to +85° C operating	IP67

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3917D High Gain GPS Antenna

The 3917D GPS antenna is a high performance value antenna with a wide voltage range, ideally suited to telematics platforms for use in vehicle-mounted applications. Using internal magnets or screw mount holes, the antenna can be installed almost anywhere on a vehicle allowing for greater flexibility. The 3917D antenna features 28 dB gain low noise amplifier and a SAW filter. With 2.7 to 5 volt operation, the antenna can be used with the vast majority of GPS systems available.

Features

- Voltage range 2.7 - 5 V
- LNA 28 dB gain typical
- Low noise figure 1.5dB



RF/Electrical Specifications

Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz \pm 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	9 mA @ 3.3V 15 mA @ 5V

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
1.77" x 2.01" x .47" (45 x 51 x 12 mm)	.26 lbs (120 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector	Mounting Method
9.8' (3 meters) highly-flexible 174 sized cable	SMA standard	Magnetic (5 lb lift-off force) or permanent (pre-threaded for 3 x M2.5 screws)

Environmental Specifications

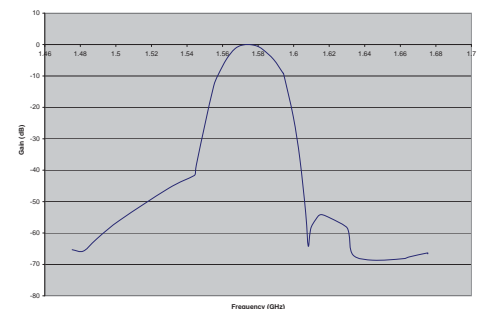
Temperature Range	Weatherproof
-40°C to +85°C operating	IP67



Low Noise Amplifier Specifications

Nominal Gain: @ 3.3VDC: 28 dB @ 5VDC: 30 dB
Noise Figure: 1.5 dB (typical)
Out-of-band rejection: +/- 15 MHz: 5 dB +/- 20 MHz: 10 dB +/- 30 MHz: 32 dB +/- 40 MHz: 40 dB
Voltage: 2.7-5 VDC

Out-of-band Filter Rejection





3927D Low Cost Magnet Mount GPS Antenna

The 3927D is a low cost magnet mount GPS antenna. It features a precisely tuned ceramic patch antenna, 15KV ESD protection, a two stage Low Noise Amplifier (LNA) and a mid-section SAW filter that provides superior out-of-band signal rejection. Housed in a very compact all plastic weatherproof enclosure, the 3927D can be installed almost anywhere on a vehicle allowing great flexibility. With its 2.7 to 5 volt operation, the 3927D can be used with the vast majority of GPS system available in the marketplace.

Features

- All plastic weatherproof housing
- 26 dB LNA gain @ 3.3V
- Low noise figure 1.5dB



Low Noise Amplifier Specifications

Nominal Gain:
@ 3.3VDC: 26 dB
@ 5VDC: 28 dB

Noise Figure:
1.5 dB

Voltage:
2.7-5 VDC

RF/Electrical Specifications

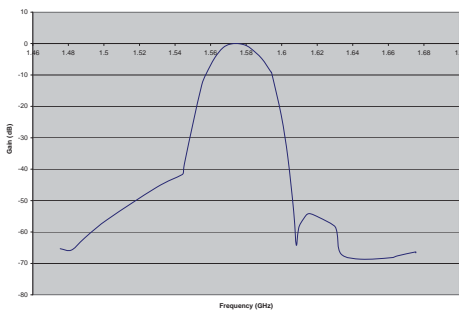
Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz \pm 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	9 mA @ 3.3V 15 mA @ 5V

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
1.43" x 1.36" x .48" (37.6 x 34.6 x 12.3 mm)	.88 oz (25 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector	Mounting Method
16.4' (5 meters) RG174	SMA male	Magnetic (5 lb lift-off force) or permanent (pre-threaded for 3 x M2.5 screws)

Out-of-band Filter Rejection



Environmental Specifications

Temperature Range	Weatherproof
-40°C to +85°C operating	IP67

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3938D Ultra Compact 2.4 GHz Covert Mount Antenna

The 3938D Ultra Compact 2.4 GHz Covert Mount Antenna provides exceptional signal reception on the 2.4 GHz ISM band. The 3938D is composed of an ultra compact semi-flexible coated PCB for covert applications. Ideal for telematics and M2M platforms

Features

- 2.4 GHz ISM Band reception
- Ultra-compact, semi-flexible PCB
- Coated PCB or packaged form factor
- Covert and dash mount
- Easy to install
- Side exit cable



RF/Electrical Specifications

Frequency Range	Nominal Gain	Nominal Impedance	VSWR
2.4-2.5 GHz	2 dBi	50 Ohms	≤ 2.0

Mechanical Specifications

Antenna Dimensions (L x W x H)	Housing Material	Cable	Connector
2.17" x .67" x .025" (55.1 x 17.0 x .64 mm)	Black solder masked PCB	6" (15 cm) RG-174	MCX Right Angle

Environmental Specifications

Temperature Range	Humidity
-40°C to +85°C operating	95% max (non condensing)

3947D GPS/Cellular/3G/2.4 GHz Combined Covert/Dash Antenna

The 3947D GPS, Quad Cellular, 3G & 2.4 GHz ISM Band antenna is an excellent choice for Telematics systems requiring dependable and highly accurate positioning data. It is also ideal for clear and consistent host-to-vehicle communications.



Features

- GPS, Quad-band Cellular & 2.4 GHz band reception
- Semi-flexible for covert installations
- Excellent out-of-band signal rejection
- High gain active GPS antenna
- Easy to install



Antenna Electrical Specifications (Cellular/3G/2.4 GHz)

Frequencies:
824-960 MHz
1710-2200 MHz
2400-2500 MHz

Nominal Impedance:
50 Ohm

VSWR:
≤1.5:1

Nominal Gain:
2 dBi

Antenna Response (GPS)

Frequency Range	Nominal Gain	Noise Figure (typical)	Polarization	VSWR
1575.42 MHz	28 dB	1.5 dB	Right Hand Circular	≤1.5:1

Antenna Electrical Specifications (GPS)

Voltage	Current Draw
3 - 5 VDC	9.0 mA @ 3.5V

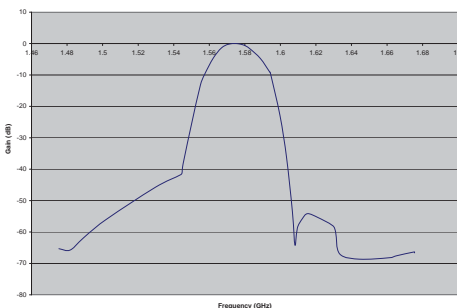
Mechanical Specifications

Antenna Dimensions	Housing	Cable	Connectors
5.2" x 2.3" x .3" (132.1 x 58.9 x 8.5mm)	Lexan® covered urethane foam	Two 9.8' (3 meters) RG174	2 x SMA male

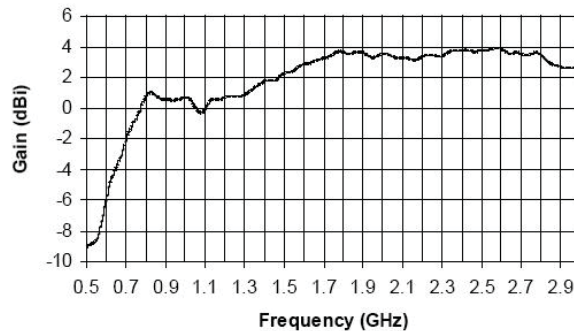
Environmental Specifications

Temperature Range
-40° C to +85° C operating

GPS Antenna out-of-band Filter Rejection



Cellular/3G/2.4 GHz Antenna Gain



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3971D Low Noise Permanent Mount GPS Antenna

The 3971D Low Noise Permanent Mount GPS Antenna has one of the industry's lowest noise figures. It features a precision tuned custom ceramic patch element, ESD circuit protection and a high rejection SAW filter. The 3971D provides clear GPS signal reception while minimizing loss-of-lock even in less than ideal conditions. Available in an all-plastic, non-corrosive low profile package for mobile applications with a dark grey or white low profile radome for mobile installations.

Features

- Weather proof, all-plastic, non-corrosive, low profile enclosure
- Very low noise (0.8 dB) LNA
- 28dB gain @ 3.3V
- Low current: 8mA @ 3.3V
- High rejection SAW filter
- 3/4 inch thru-hole or bracket mount
- Voltage range 2.7 to 5.5 V
- Available in a black or white radome



RF/Electrical Specifications

Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz ± 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	8 mA @ 3.3V

Mechanical Specifications

Antenna Dimensions (diameter x height)	Weight	Shock	Vibration
2.36" x .83" (60 x 21 mm)	.11 lbs (50 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Housing	Connector	Mounting Method
GE Lexan® EXL9330	TNC female	3/4" thru-hole or bracket mount*

Environmental Specifications

Temperature Range	Weatherproof
-40° C to +85° C operating	IP67

Models

Part Number	Description
3971D	Black radome
3971D-W	White radome

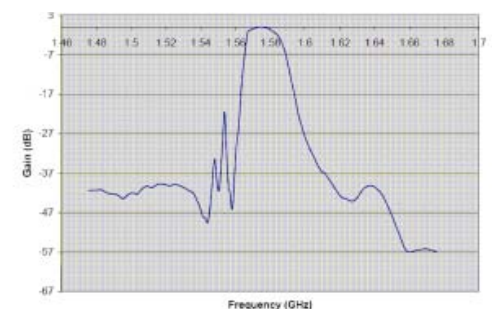
*Order MMK1925 bracket for compatible mounting

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Low Noise Amplifier Specifications

Nominal Gain: 28 dB @ 3.3V
Noise Figure: 0.8 dB (typical)
Voltage: 2.7-5 VDC

Out-of-band Filter Rejection





3977D Permanent Mount GPS Antenna

The 3977D permanent mount GPS Antenna provides 28 dB gain and great out-of-band rejection performance. It features a precision tuned custom ceramic patch element for maximum signal reception and 15KV ESD circuit protection. This enables the 3977D to minimize loss-of-lock, even when conditions are less than ideal. Available in an all-plastic, non-corrosive low profile package for vehicle mounting in a white or dark gray housing.

Features

- Weather proof, all-plastic, non-corrosive, low profile enclosure
- 3/4 inch thru-hole or bracket mount
- Voltage range: 2.7 to 5.5 V
- High gain: 28 dB
- Low noise figure: 1.5 dB
- High out-of-band signal rejection

Low Noise Amplifier Specifications

Nominal Gain:
 @ 3.3VDC: 28 dB
 @ 5VDC: 30 dB

Noise Figure:
 1.5 dB (typical)

Voltage:
 2.7-5 VDC

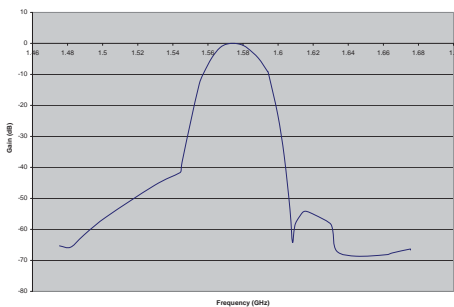
RF/Electrical Specifications

Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz ± 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	9 mA @ 3.3V 15 mA @ 5V

Mechanical Specifications

Antenna Dimensions (diameter x height)	Weight	Shock	Vibration
2.36" x .83" (60 x 21 mm)	.11 lbs (50 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G
Housing	Connector	Mounting Method	
GE Lexan EXL9330	TNC female	3/4" thru-hole or bracket mount*	

Out-of-band Filter Rejection



Environmental Specifications

Temperature Range	Weatherproof
-40° C to +85° C operating	IP67

Models

Part Number	Description
3977D	Black radome
3977D-W	White radome

*Order MMK1925 bracket for compatible mounting

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3978D High Gain Permanent Mount GPS Antenna

The 3978D high gain permanent mount GPS Antenna provides 40 dB gain and great high out-of-band rejection performance and is the optimum choice for GPS Tracking and Timing applications with long cable runs and stand alone GPS applications. It features a precision tuned custom ceramic patch element for maximum signal reception, 15 KV ESD circuit protection, a very low noise (0.5 dB) 3 stage LNA circuit and a SAW filter. This enables the 3978D to provide a reliable and clear GPS signal while minimizing loss-of-lock, even when conditions are less than ideal. Available in an all-plastic, non-corrosive low profile package for vehicle mounting.

Features

- Weather proof, all-plastic, black, non-corrosive, low profile enclosure
- 3/4 inch thru-hole or bracket mount
- Voltage range: 2.7 to 5.5 V
- High gain: 40 dB (typical)
- Low noise figure 0.5dB



RF/Electrical Specifications

Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz ± 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	15 mA @ 5.5 VDC

Mechanical Specifications

Antenna Dimensions (diameter x height)	Weight	Shock	Vibration
2.36" x .83" (60 x 21 mm)	.11 lbs (50 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Housing	Connector	Mounting Method
GE Lexan EXL9330	TNC jack	3/4" thru-hole or bracket mount*

Low Noise Amplifier Specifications

Nominal Gain: 40 dB
Noise Figure: 0.5 dB (typical)
Voltage: 2.7-5.5 VDC
ESD Circuit Protection: 15K volts

Environmental Specifications

Temperature Range	Weatherproof
-40° C to +85° C operating	IP67

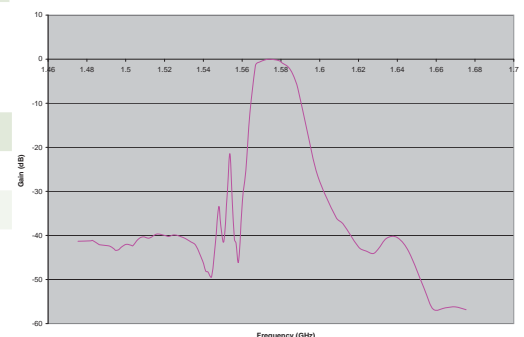
Models

Part Number	Description
3978D	Black radome
3978D-W	White radome

*Order MMK1925 bracket for compatible mounting

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Out-of-band Filter Rejection





3978D-DH-W High Gain Permanent Mount GPS Antenna

The 3978D-DH-W high gain permanent mount GPS Antenna provides 40 dB gain and great high out-of-band rejection performance and is the optimum choice for GPS Tracking and Timing applications with long cable runs and stand alone GPS applications. It features a precision tuned custom ceramic patch element for maximum signal reception, 15KV ESD circuit protection, a very low noise (0.5 dB) 3 stage LNA circuit and a SAW filter. This enables the 3978D-DH-W to provide a reliable and clear GPS signal while minimizing loss-of-lock, even when conditions are less than ideal. Available in an all-plastic, non-corrosive low profile package for vehicle mounting.

Features

- Weather proof, all-plastic, non-corrosive, cone-shaped enclosure
- 3/4 inch thru-hole or bracket mount
- Unique radome sheds water and ice, while eliminating problems associated with bird perching
- Voltage range: 2.7 to 5.5 V
- High gain: 40 dB (typical)
- Low noise figure: 0.5dB

Low Noise Amplifier Specifications

Nominal Gain:
40 dB

Noise Figure:
0.5 dB (typical)

Voltage:
2.7-5 VDC

ESD Circuit Protection:
15 KV

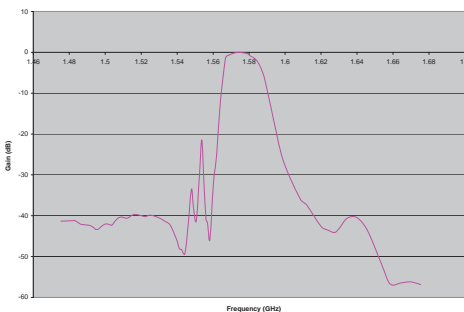
RF/Electrical Specifications

Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz ± 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	15 mA @ 5.5 VDC

Mechanical Specifications

Antenna Dimensions (diameter x height)	Weight	Shock	Vibration
2.36" x 1.73" (60 x 44 mm)	.11 lbs (50 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G
Housing	Connector	Mounting Method	
GE Lexan® EXL9330	TNC jack	3/4" thru-hole or bracket mount*	

Out-of-band Filter Rejection



Environmental Specifications

Temperature Range	Weatherproof
-40° C to +85° C operating	IP67

*Order MMK1925 bracket for compatible mounting

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5012D-U Smart GPS Antenna with Integrated Receiver

The 5012D-U GPS Receiver + Antenna incorporates a highly sensitive 16-channel, very quick time-to-fix GPS Receiver, and a high performance active/filtered GPS antenna. It features high performance GPS Engine with embedded flash memory, a Low Noise Amplifier, SAW filter, as well as a precision tuned ceramic patch element for maximum GPS signal reception. The 5012D-U High Sensitivity GPS Receiver + Antenna is housed in a compact, rugged weatherproof magnet or screw mount enclosure.



Features

- Highly Sensitive: -159dBm tracking
- Quick Time to Fix: 39 sec cold start
- 16 channel GPS Engine
- Standard NMEA 0183 GPS output
- WAAS and EGNOS supported
- Low power & standby modes
- Weatherproof industrial grade enclosure



Antenna Response Specifications

Center Frequency	Nominal Gain	Polarization	Out-of-Band Rejection
1575.42 MHz ± 10 MHz	3 dBic @ 90° -2.0 dBic @ 20°	Right Hand Circular	+15 MHz: 10 dB/- 15 MHz:30dB +20 MHz: 20 dB/- 20 MHz:30dB +40 MHz: 40 dB/- 40 MHz:40dB

Antenna Electrical Specifications

Voltage	Current Draw
5 volts USB comm interface	85 mA max

Mechanical Specifications

Antenna Dimensions	Weight	Mounting
2.05" x 2.32" x .53" (52.1 x 58.9 x 13.6 mm)	.26 lbs (120 g)	Magnetic (5 lb lift-off) or Screw mount (M2.5 pre-threaded)

Shock	Vibration	Cable Length	Interface
Vertical axis 50G, other axes 30G	3 axis, sweep tt= 15 min; 10 - 200 Hz log sweep: 3G	9.8' (3 meters) highly flexible USB cable	USB

Environmental Specifications

Temperature Range	Weather Proof
-40°C to +85°C operating	IP67

GPS Performance

Frequency: L1: 1575.42 MHz
Channels: 16 channels parallel
Sensitivity: Acquisition: -146dBm Tracking: -159dBm
Accuracy: 2 m (autonomous) <1 metre (SBAS)
Time to First Fix: Cold start: 39 sec Warm start: 34sec Hot start: 2.5 sec Reacquisition <1 sec
Serial Protocol: Output: NMEA 0183 Baud Rate: 4800 bps (default), user configuration up to 115kbps Update Rate: 1Hz NMEA Message: GGA, VTG, GSA, GSV, RMC

3910D Very Low Noise Mobile GPS Antenna

The 3910D GPS antenna has one of the industry's lowest noise figures. It features ESD circuit protection, an innovative very low noise LNA and a high rejection SAW filter. It also features a precisely tuned custom ceramic patch element that minimizes detuning effects caused by adjacent objects. The 3910D is ideal for Fleet Management, Asset Tracking and Precision Agriculture as well any application with poor signal reception area.

The 3910D provides consistent, clear GPS signal reception while minimizing loss-of-lock in high-RF fields. Housed in a weatherproof magnetic or screw mount enclosure, the 3910D GPS antenna is ideal for demanding vehicle mounted GPS applications.

Features

- Low noise: 0.5 dB
- Low current: 8mA
- Superior out-of-band rejection
- Wide voltage input range (2.7 - 5 VDC)
- Robust IP67 housing built for various weather conditions



RF/Electrical Specifications

Center Frequency	Nominal Gain	Polarization	Current Draw
1575.42 MHz ± 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	8 mA @ 3.3V

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
1.77" x 2.01" x .47" (45 x 51 x 12 mm)	.29 lbs (130 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector	Mounting Method
9.8' (3 meters) highly-flexible 174 sized cable	SMA standard	Magnetic (5 lb lift-off force) or permanent (pre-threaded for 3 x M2.5 screws)

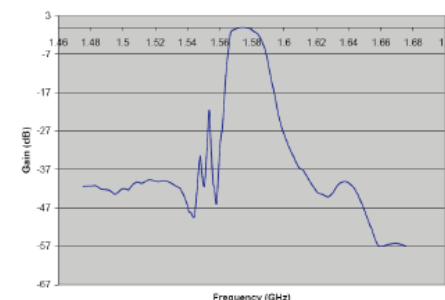
Environmental Specifications

Temperature Range	Weatherproof
-40° C to +85° C operating	IP67

Low Noise Amplifier Specifications

Nominal Gain: 28 dB @ 3.3VDC
Noise Figure: 0.5 dB (typical)
Voltage: 2.7-5 VDC

Out-of-band Filter Rejection



3971D-DH-W Low Noise Permanent Mount GPS Antenna

The 3971D-DH-W Permanent Mount GPS Antenna provides 28 dBd of gain and has one of the industry's lowest noise figures. It provides clear GPS signal reception while minimizing loss-of-lock even in less than ideal conditions and is the optimum choice for GPS Tracking and Timing applications with long cable runs and stand alone GPS applications. The 3971D-DH-W features a precision tuned custom ceramic patch element, ESD circuit protection and a high rejection SAW filter. Available in an all-plastic, non-corrosive white cone-shaped radome for fixed installations.

Features

- Weather proof, all-plastic, non-corrosive, cone-shaped enclosure
- Unique radome sheds water and ice, while eliminating problems associated with bird perching
- 28dB gain
- Low current: 8mA (typ)
- 3/4 inch thru-hole or bracket mount
- Voltage range 2.7 to 5.5 V

RF/Electrical Specifications

Center Frequency	Nominal Gain	Current Draw
1575.42 MHz \pm 10 MHz	3 dBic @ 90° -2 dBic @ 20°	8 mA (typical)

Mechanical Specifications

Antenna Dimensions (diameter x height)	Weight	Shock	Vibration
2.36" x 1.73" (60 x 44 mm)	.11 lbs (50 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Housing	Connector	Mounting Method
GE Lexan® EXL9330	TNC jack	3/4" thru-hole or bracket mount*

Environmental Specifications

Temperature Range	Weatherproof
-40° C to +85° C operating	IP67

*Order MMK1925 bracket for compatible mounting

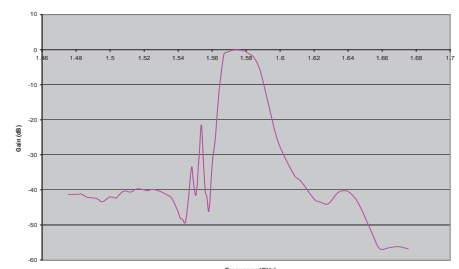
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Low Noise Amplifier Specifications

Nominal Gain: 28 dB @ 3.3V
Noise Figure: 0.8 dB (typical)
Voltage: 2.7-5 VDC

Out-of-band Filter Rejection





1357D Compact Embedded GPS Antenna

The Compact 1357D Embedded GPS antenna is ideal for GPS enabled ruggedized PDAs, laptops and portable GPS Handhelds. The 1357D antenna features a compact ceramic patch element, ESD circuit protection, a low noise amplifier and a SAW filter, enabling the 1357D to provide great out-of-band signal rejection performance, consistent and clear signal while minimizing loss-of-lock in an extremely small form factor.

Features

- Ultra compact form factor
- 15 KV ESD circuit protection
- 2.7 to 5 V operation
- Ideal for embedded applications



Low Noise Amplifier Specifications

Nominal Gain: @ 3.3VDC: 28 dB @ 5VDC: 30 dB
Noise Figure: 1.5 dB (typical)
Voltage: 2.7 - 5 V
Out-of-band Rejection: +/- 15 MHz: 5dB +/- 20 MHz: 10 dB +/- 30 MHz: 32 dB +/- 40 MHz: 40 dB

RF/Electrical Specifications

Center Frequency	Gain	Polarization	Current Draw
1575.42 MHz \pm 10 MHz	0.5 dBic	Right Hand Circular	9 mA @ 3.3V 15 mA @ 5V

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
.63" x .63" x .23" (16 x 16 x 5.8 mm)	.21 oz (5.9 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector
6" (15 cm) CO-6F.FH-SB cable (1.5 mm diameter)	H.FL

Environmental Specifications

Temperature Range	Humidity
-40°C to +85°C operating	95% max (non condensing)

1857D Compact Embedded GPS Antenna

The Compact 1857D Embedded GPS antenna is ideal for GPS enabled ruggedized PDAs, laptops and portable GPS Handhelds. The 1857D antenna features a custom tuned frequency ceramic patch element, ESD circuit protection, a two stage low noise amplifier and a SAW filter, enabling the 1857D to provide great out-of-band signal rejection performance, consistent and clear signal while minimizing loss-of-lock in a very small form factor.

Features

- Very compact form factor
- 15 KV ESD circuit protection
- 2.7 to 5 Volt operation
- Ideal for embedded applications



Low Noise Amplifier Specifications

Nominal Impedance: 50 Ohm
VSWR: 1.5:1 max (at connector)
Nominal Gain: @ 3.3VDC: 28 dB @ 5VDC: 30 dB
Noise Figure: 1.5 dB (typical)
Voltage: 2.7 - 5 VDC
Out-of-band Rejection: +/- 15 MHz: 5 dB +/- 20 MHz: 10 dB +/- 30 MHz: 32 dB +/- 40 MHz: 40 dB

RF/Electrical Specifications

Center Frequency	Gain	Polarization	Current Draw
1575.42MHz ±10 MHz	1 dBic	Right Hand Circular	9 mA @ 3.3V 15 mA @ 5V

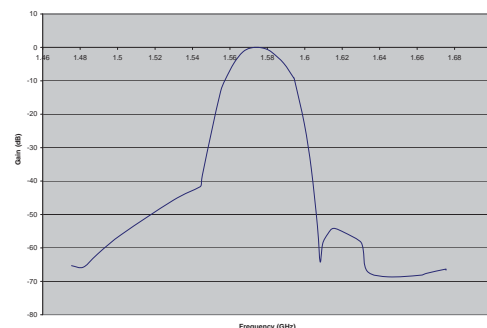
Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
.71" x .71" x .28" (18 x 18 x 7 mm)	.28 oz (8 g)	Vertical axis 50G, Other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G
Cable		Connector	
6" (15 cm) RG174		Right angle MCX	

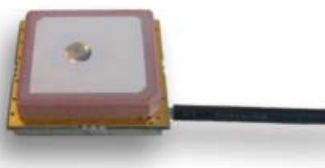
Environmental Specifications

Temperature Range	Humidity
-40° C to +85° C operating	95% max (non condensing)

Out-of-band Filter Rejection Chart



3951D Low Noise Embedded GPS Antenna



The 3951D Embedded GPS Antenna has one of the industry's lowest noise figures. It features a tuned custom ceramic patch element that minimizes detuning effects caused by adjacent objects. It also features ESD circuit protection, an innovative LNA (low noise amplifier) and a high rejection SAW filter which enable a consistent, clear signal while minimizing loss-of-lock even when GPS conditions are less than ideal.

Features

- 15 KV ESD circuit protection
- Low noise figure: 0.5 dB LNA
- Excellent out-of-band signal rejection
- Ideal for embedded applications



Low Noise Amplifier Specifications

Nominal Impedance: 50 Ohm
VSWR: 1.5:1 max (at connector)
Nominal Gain: @ 3.3VDC: 28 dB @ 5VDC: 30 dB
Noise Figure: 0.5 dB (typical)
Voltage: 2.7 - 5.0 VDC

RF/Electrical Specifications

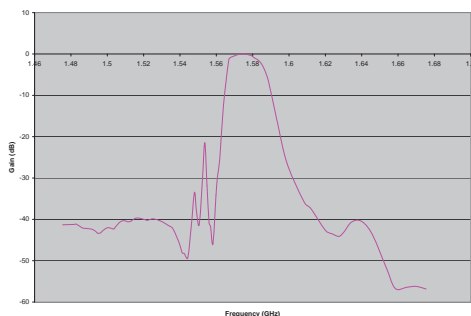
Center Frequency	Gain	Polarization	Current Draw
1575.42MHz ±10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	7.5 mA @ 3.3VDC (typical)

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
1.1" x 1.1" x .3" (28.4 x 28.3 x 7.7 mm)	.56 oz (16 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector
6" (15 cm) RG174	MCX right angle

Out-of-band Filter Rejection Chart



Environmental Specifications

Temperature Range	Humidity
-40°C to +85°C operating	95% max (non condensing)

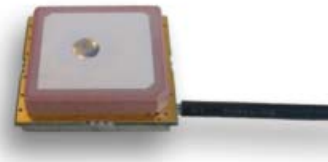
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3957D Embedded GPS Antenna

The 3957D GPS antenna is ideal for ruggedized handheld GPS devices, mobile asset tracking equipment and GPS timing applications. This antenna features a custom designed ceramic patch element, a two-stage low noise amplifier and a SAW filter, enabling it to provide great out-of-band signal rejection performance, consistent and clear signal while minimizing loss-of-lock. The 3957D comes in a compact square package.

Features

- 2.7 - 5 V operation
- 15 KV ESD circuit protection
- Ideal for embedded applications



RF/Electrical Specifications

Center Frequency	Gain (typical)	Polarization	Current Draw
1575.42MHz ±10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	9 mA @ 3.3V 15 mA @ 5V

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
1.2" x 1.1" x 0.3" (29.5 x 28.4 x 8 mm)	.56 oz (16 g)	Vertical axis 50G Other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector
6" (15 cm) RG174	Right angle MCX

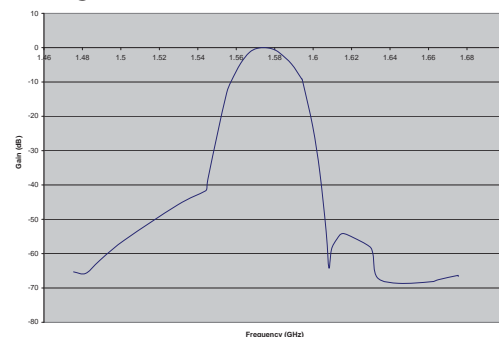
Environmental Specifications

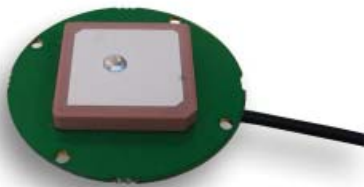
Temperature Range	Humidity
-40°C to +85°C operating	95% max (non condensing)

Low Noise Amplifier Specifications

Nominal Impedance: 50 Ohm
VSWR: 1.5:1 max (at connector)
Nominal Gain: @ 3.3VDC: 28 dB @ 5VDC: 30 dB
Noise Figure: 1.5 dB (typical)
Voltage: 2.7 - 5 VDC
Out-of-band Rejection: +/- 15 MHz: 5 dB +/- 20 MHz: 10 dB +/- 30 MHz: 32 dB +/- 40 MHz: 40 dB

Out-of-band Filter Rejection Chart





3961D Low Noise Embedded GPS Antenna

The 3961D Embedded GPS Antenna has one of the industry's lowest noise figures. It features a tuned custom ceramic patch element that minimizes detuning effects caused by adjacent objects. It also features ESD circuit protection, an innovative LNA (low noise amplifier) and a high rejection SAW filter which enable these antennas to provide a consistent, clear signal while minimizing loss-of-lock even when GPS conditions are less than ideal. The 3961D comes with a 45.2 mm diameter mini ground plane.

Features

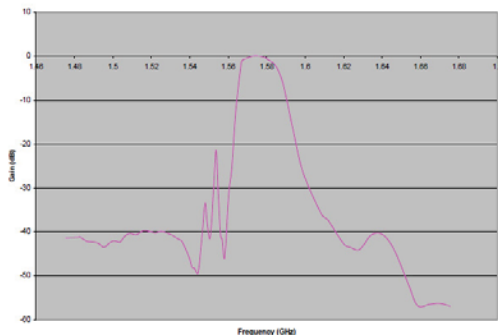
- Comes with internal ground plane
- 15 KV ESD circuit protection
- Low noise figure: 0.5 dB
- Excellent out-of-band signal rejection
- Ideal for embedded applications



Low Noise Amplifier Specifications

Nominal Impedance: 50 Ohm
VSWR: 1.5:1 max (at connector)
Nominal Gain: @ 3.3VDC: 28 dB @ 5VDC: 30 dB
Noise Figure: 0.5 dB (typical)
Voltage: 2.7 - 5 VDC

Out-of-band Filter Rejection Chart



RF/Electrical Specifications

Center Frequency	Gain	Polarization	Current Draw
1575.42MHz ±10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	7.5 mA @ 3.3VDC (typical)

Mechanical Specifications

Antenna Dimensions	Weight	Shock	Vibration
1.8" x .3" (45.2 x 7.7 mm)	.56 oz (16 g)	Vertical axis 50G, other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G
Cable		Connector	
6" (15 cm) RG174		MCX right angle	

Environmental Specifications

Temperature Range	Humidity
-40°C to +85°C operating	95% max (non condensing)

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3967D Embedded GPS Antenna

The 3967D GPS antenna is ideal for ruggedized handheld GPS devices, mobile asset tracking equipment and GPS timing applications. The 3967D features a custom designed ceramic patch element, a two-stage low noise amplifier and a SAW filter, providing great out-of-band signal rejection performance, consistent and clear signal while minimizing loss-of-lock. The 3967D comes with a 1.85" mini-ground plane.

Features

- 2.7 - 5 V operation
- 15 KV ESD circuit protection
- Comes with internal ground plane
- Ideal for embedded applications

RF/Electrical Specifications

Center Frequency	Gain (typical)	Polarization	Current Draw
1575.42MHz \pm 10 MHz	3 dBic @ 90° -2 dBic @ 20°	Right Hand Circular	9 mA @ 3.3V 15 mA @ 5V

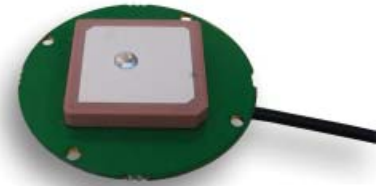
Mechanical Specifications

Antenna Dimensions (diameter x height)	Weight	Shock	Vibration
1.85" x 0.32" (47 x 8 mm)	.56 oz (16 g)	Vertical axis 50G Other axes 30G	3 axis, sweep = 15 min 10 - 200 Hz log sweep: 3G

Cable	Connector
6" (15 cm) RG174	Right angle MCX

Environmental Specifications

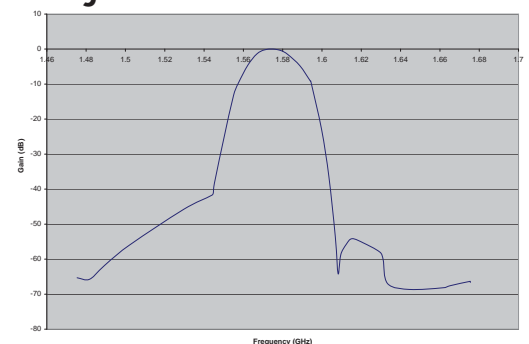
Temperature Range	Humidity
-40°C to +85°C operating	95% max (non condensing)

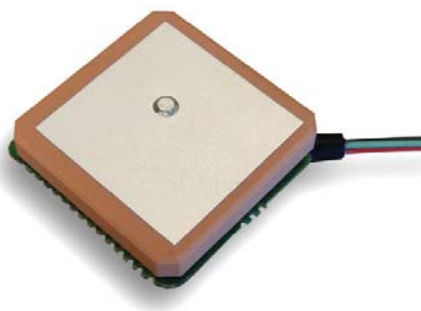


Low Noise Amplifier Specifications

Nominal Impedance: 50 Ohm
VSWR: 1.5:1 max (at connector)
Nominal Gain: @ 3.3VDC: 28 dB @ 5VDC: 30 dB
Noise Figure: 1.5 dB
Voltage: 2.7 - 5.0 VDC
Out-of-band Rejection: +/- 15 MHz: 5 dB +/- 20 MHz: 10 dB +/- 30 MHz: 32 dB +/- 40 MHz: 40 dB

Out-of-band Filter Rejection Chart





GPS Receiver Performance

Frequency: L1, 1575.42 MHz
Channels: 16 channels parallel
Sensitivity: Acquisition: -146dBm Tracking: -159dBm
Accuracy: 2m (autonomous) <1 metre (SBAS)
Time to First Fix: Cold start: 39 sec Warm start: 34sec Hot start: 2.5 sec Reacquisition <1 sec
Serial Protocol: Output: NMEA 0183 Baud Rate: 4800 bps (default), user configurable up to 115kbps Update Rate: 1Hz NMEA Message: GGA, VTG, GSA, GSV, RMC
Wiring Information: Red: VCC Black: Ground White: Tx Green: Rx

5012D-CE Embedded High Sensitivity Tracking & Timing GPS Receiver + Antenna

The 5012D-CE Embedded GPS Receiver + Antenna incorporates a highly sensitive 16-channel, very quick time to fix GPS Receiver as well as a high performance active/filtered GPS antenna. It features the STMicroelectronics STA8058 Teseo™ high performance GPS Engine with embedded flash memory, an LNA, SAW filter, as well as a precisely tuned ceramic patch element for maximum GPS signal reception. The 5012D-CE High Sensitivity GPS Receiver + Antenna is ideal for embedded applications and comes with CMOS flying leads.

Features

- Integrated GPS receiver + antenna (active)
- Very High Sensitivity: -159dBm tracking
- Quick Time to Fix: 39 sec cold start
- 16 channel ST Teseo™ GPS Engine
- Flash memory: upload embedded GPS Firmware, settings & history
- Standard NMEA 0183; GPS output
- 1PPS output: 50n second accuracy
- WAAS and EGNOS supported
- Low current: 80 mA typ., 3.3V operation
- Compact form factor: 25.76 mm square
- Ideal for embedded applications
- RoHS compliant

Antenna Response Specifications

Center Frequency	Nominal Gain	Polarization	Out-of-Band Rejection
1575.42 MHz ± 10 MHz	3 dBic @ 90° -2.0 dBic @ 20°	Right Hand Circular	+15 MHz: 10 dB/- 15 MHz: 30dB +20 MHz: 20 dB/- 20 MHz: 30dB +40 MHz: 40 dB/- 40 MHz: 40dB

Antenna Electrical Specifications

Voltage	Current Draw
3.3V ±10% (CMOS version)	85 mA max (CMOS version)

Mechanical/Environmental Specifications

Antenna Dimensions	Weight	Mounting	Shock
1.0" x 1.0" x .33" (25.76 x 25.76 x 8.4 mm)	14 g (0.49 oz)	Adhesive (not included)	Vertical axis 50G, other axes 30G

Vibration	Interface	Temperature Range	Humidity
3 axis, sweep = 15 min; 10-200 Hz log sweep: 3G	CMOS, 10cm 4 x 26AWG	-40°C to +85°C operating (-45°C to +85°C storage)	95% max (non-condensing)

GPS Receiver + Antenna with Digital Interface RS232 Terminations

The 5012D-RD Series GPS Receiver + Antenna incorporate a 16-channel high sensitivity receiver with fast, first time to GPS fix. This, coupled with position information maintained over power cycles, provides immediate and accurate position reporting. All models in the 5012D-RD series all come with a CMOS to RS232 adapter cable connected by two, 4-pin DIN connectors for ease in installation.

Features

- Plug and Play GPS tracking
- Simple Interface to Data-Ready Radios
- NMEA RMC message output
- Maintains position over power cycles
- RS232 (TTL interface option)
- Magnetic and screw hole mount
- Rugged weatherproof IP67 housing
- Ideal for embedded applications

RF/Electrical Specifications

Frequency Range	Polarization	Voltage
1575.42 MHz	Right Hand Circular	8 to 18 VDC

Mechanical Specifications

Antenna Dimensions	Weight *	Mounting
2.1" x 2.3" x .07" (52.1 x 58.9 x 16.6 mm)	4.2 oz (120 g)	Magnetic (5 lb lift-off) or Screw mount (M2.5 pre-threaded)

Environmental Specifications

Temperature Range	Humidity
-40°C to +85°C operating (-45°C to +85°C storage)	95% max (non-condensing)

Interface/Connector

Model	Interface/Connector Description
5012D-RD9	RS232/DB9 Male with 3 meter cable
5012D-RD15	RS232/DB15 Male with 3 meter cable
5012D-RD25	RS232/DB25 Male with 3 meter cable

* Does not include adapter cable

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5012D-RD9



RD9 (left) and RD15 (right) Connectors



RD25 Connector



GPS Performance

Frequency: L1, 1575.42 MHz
Channels: 16 channels parallel
Sensitivity: Acquisition: -146dBm Tracking: -159dBm
Accuracy: 2m (autonomous) <1 metre (SBAS)
Time to First Fix: Cold start: 39 sec Warm start: 34sec Hot start: 2.5 sec Reacquisition <1 sec
Serial Protocol: Output: NMEA 0183 Baud Rate: 4800 bps (default), user configurable up to 115kbps Update Rate: 1Hz NMEA Message: GGA, VTG, GSA, GSV, RMC